Basic components of Tree-based Direct Sampling

1. Antarctica topography simulation:

2.1 Training Phase: **Application2_2D_Antarctica_Topography_Simulation.ipynb**

Input: Training image (Antarctica_ds_data4.txt)

Parameters: (1) the template size; (2) the height of tree; (3) the artificial threshold. The Training Phase will view the value below this threshold as unknown points.

Output: (1) z_Antarctica_python_cluster_AverageDistance.txt;
(2) z_Antarctica_python_clusterTree_Representative_X.txt;
(3) z_Antarctica_python_clusterTree_Representative_Y.txt;
(4) z_Antarctica_python_clusterTree_Result.txt.
(5) z_Antarctica_TI_refined.txt

Notice: Paste these four files into the folder of the Simulation Phase

2.2 Simulation Phase: **Main_Antarctica_ClusterTreeSimulation2D_PatternBased_rank.java**
Main_Antarctica_DirectSampling2D.java

Input: (1) training image (`z_Antarctica_python_realization.txt`);
(2) **four files generated by Training Phase**;

Parameters: (1) the radius of DS template;
(2) the neighborhood within DS;
(3) the distance threshold within DS;
(4) the fraction within DS;
(5) the height of tree within TDS. Need to be consistent with the Training Phase;
(6) the number of checked clusters within TDS. Denoted by 'minimumComputation';
(7) the distance scalar within TDS. Denoted by 'PointPatternSlope';
(8) the number of realizations;
(9) the height and width of realization;
(10) the unknown bound. The program views point whose value is below this bound as unknown;

Output: Realizations in txt format.